

**WHAT IS CLAIMED:**

1. A method for enhancing the signal reception of a digital wireless receiver, the method comprising the steps of:

- 5 extracting a preamble information from a plurality of incoming signals;
- processing a first predetermined portion of said preamble information with a first antenna to produce a first preamble sequence;
- processing a second predetermined portion of said preamble information with a second antenna to produce a second preamble sequence;
- 10 calculating a mean-square error (MSE) for said first preamble sequence received from said first antenna and said second preamble sequence received from said second antenna; and,
- selecting one of said first antenna and said second antenna having a lower MSE for subsequent reception of said incoming signals.

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2. The method of claim 1, wherein the step of calculating said MSE further comprises the step of comparing said first preamble sequence and said second preamble sequence with a predefined preamble sequence.

- 20 3. The method of claim 2, wherein said predefined preamble sequence is a known priori.

4. The method of claim 1, wherein said processing steps further comprise the step of demodulating said first predetermined portion of said preamble information received by said first antenna to obtain said first preamble sequence.

5 5. The method of claim 1, wherein said processing steps further comprise the step of demodulating said second predetermined portion of said preamble information received by said second antenna to obtain said second preamble sequence.

6. The method of claim 1, further comprising the steps of selecting said first  
10 antenna for subsequent reception of said incoming signals if the MSE for said first preamble sequence received from said first antenna is lower than a predetermined threshold value.

7. The method of claim 6, further comprising the step of selecting said second  
15 antenna for subsequent reception of said incoming signals if the MSE for said first preamble sequence received from said first antenna exceeds said predetermined threshold value.

8. The method of claim 1, further comprising the step of generating a time-  
20 varying convergence rate based on said calculated MSE for said first preamble sequence and said preamble sequence in an x-y plot .

9. The method of claim 8, further comprising the step of selecting one of said first antenna and said second antenna having a faster convergence rate for subsequent reception of said incoming signals.

5 10. A method for enhancing the signal reception of a digital wireless receiver, the method comprising the steps of:

receiving a plurality of incoming signals;

dividing the header information of said incoming signals to process said divided header information by a first antenna and a second antenna;

10 comparing said processed header information from said first antenna and said second antenna with a predefined preamble sequence to obtain a mean square error (MSE); and,

selecting one of said first antenna and said second antenna having a lower MSE for subsequent reception of said incoming signals.

15 11. The method of claim 10, wherein the step of dividing the header information of said incoming signals further comprises the step of demodulating the header information of said incoming signals received from said first antenna and said second antenna to obtain said processed header information.

20 12. The method of claim 10, wherein said predefined preamble sequence is a known priori.

13. The method of claim 10, further comprising the steps of selecting said first antenna for subsequent reception of said incoming signals if the MSE for said first antenna is lower than a predetermined threshold value.

5 14. The method of claim 13, further comprising the step of selecting said second antenna for subsequent reception of said incoming signals if the MSE for said first antenna exceeds said predetermined threshold value.

10 15. The method of claim 10, further comprising the step of generating a time-varying convergence rate based on said MSE for said first antenna and said second antenna in an x-y plot.

15 16. The method of claim 8, further comprising the step of selecting one of said first antenna and said second antenna having a faster convergence rate for subsequent reception of said incoming signals.

17. An apparatus for enhancing the signal reception of a digital wireless receiver, comprising:

20 a processing circuit for processing a preamble information of incoming signals, wherein a first predetermined portion of said preamble information is applied to a first antenna and a second predetermined portion of said preamble information is applied to a second antenna to produce a plurality of processed signals, and said plurality of processed

signals is compared to a predefined preamble sequence to obtain a mean-square error (MSE) for the respective antenna; and,

a selecting circuit for selecting one of said first antenna and said second antenna having a lower MSE for subsequent reception of said incoming signals.

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18. The apparatus of claim 17, wherein said predefined preamble sequence is known a priori.

19. The apparatus of claim 17, further comprising means for demodulating said preamble information of said incoming signals received from said first antenna and said second antenna to obtain said plurality of processed signals.

20. An apparatus for enhancing the signal reception of incoming signals of a digital wireless receiver, comprising:

15 a first antenna for receiving said incoming signals;

a second antenna for receiving said incoming signals;

a processing circuit for processing a preamble information of said incoming signals, wherein a first predetermined portion of said preamble information is applied to said first antenna and a second predetermined portion of said preamble information is applied to said second antenna to produce a plurality of processed signals, and said plurality of processed signals is compared to a predefined preamble sequence to generate a mean-square error (MSE) for the respective antenna; and,

a selecting circuit for selecting one of said first antenna and said second antenna having a lower MSE for subsequent reception of said incoming signals.

21. The apparatus of claim 20, wherein said predefined preamble sequence is a known priori.

22. The apparatus of claim 20, further comprising a means for demodulating said preamble information of said incoming signals received from said first antenna and said second antenna to obtain said plurality of processed signals.